

Amendment to the Claims

Please amend claims 1 and 10 as shown in the following listing of claims. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A game controller comprising:
 - a moveable element having an optically readable pattern on a surface thereof, said moveable element moving relative to a fixed position and having a position characterized by a relative position of said moveable element relative to said fixed position;
 - an imaging element that forms an image of a sub-area on said surface, said sub-area being determined by said relative position of said moveable element relative to said fixed position;
 - a memory including a map that specifies said readable pattern in each sub-area on said surface that can be imaged by said imaging element, said map being a reference image of said surface of said moveable element that is larger than said image of said sub-area on said surface formed by said imaging element such that said image corresponds to a portion of said reference image; and
 - a controller configured to compare said image to said map to determine said position of said moveable element.
2. (original) The game controller of claim 1 wherein said pattern comprises a plurality of randomly distributed spots.
3. (previously presented) The game controller of claim 1 wherein said controller generates a signal indicative of a position of said movable element in terms of first and second orthogonal displacements from a reference position.
4. (original) The game controller of claim 1 wherein said controller generates a signal indicative of a rotation of said moveable element about a predetermined axis on said moveable element.
5. (original) The game controller of claim 4 wherein said moveable element

comprises a handle.

6. (original) The game controller of claim 5 wherein said handle comprises a shaft with a shaft axis parallel to said predetermined axis.

7. (original) The game controller of claim 5 wherein said handle further comprises a push button having a state that is sensed by said controller.

8. (original) The game controller of claim 1 wherein said map comprises a plurality of sub-maps that are rotated relative to one another.

9. (original) The game controller of claim 1 wherein said controller comprises a plurality of search processors, each search processor comparing a portion of said map with said image formed by said imaging element.

10. (currently amended) A game controller comprising:

a surface comprising optically readable features on at least a portion thereof, said surface further comprising a plurality of sub-areas, each sub-area containing a distinct arrangement of said optically readable features;

at least one imaging device;

wherein, said surface and said at least one imaging device are movable relative to one another;

wherein, said imaging device is capable of forming an image of said optically readable features in each of said sub-areas, the location of a sub-area being imaged by said imaging device at any given time determined by the relative positions of said surface and said imaging device at that time;

a memory storing a map that specifies images corresponding to each sub-area of said surface, said map being a reference image of said surface that is larger than said image of said optical readable features in each of said sub-areas of said surface formed by said imaging device such that said image corresponds to a portion of said reference image; and

a controller configured to compare an image acquired by said imaging device to said map to determine the relative positions of said surface and said imaging device.

11. (previously presented) The game controller of claim 10 wherein said optically readable features comprise a plurality of randomly distributed spots.
12. (previously presented) The game controller of claim 10 wherein said controller generates a signal indicative of a position of said surface in terms of first and second orthogonal displacements from a reference position.
13. (previously presented) The game controller of claim 10 wherein said controller generates a signal indicative of a rotation of said surface about a predetermined axis on said surface.
14. (previously presented) The game controller of claim 13 wherein said surface is located on a handle.
15. (previously presented) The game controller of claim 14 wherein said handle comprises a shaft with a shaft axis parallel to said predetermined axis.
16. (previously presented) The game controller of claim 14 wherein said handle further comprises a push button having a state that is sensed by said controller.
17. (previously presented) The game controller of claim 10 wherein said map comprises a plurality of sub-maps that are rotated relative to one another.
18. (previously presented) The game controller of claim 10 wherein said controller comprises a plurality of search processors, each search processor comparing a portion of said map with said image formed by said imaging device.